

dlgv32 -- Windows 95 Display Software for DLG and DRG Data
Users Manual
(software version 3.0 beta)
January, 1998

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1. Introduction

This manual is for *dlgv32* version 3.0 beta. Earlier versions of the software may not contain all the features documented here. Later versions may contain additional features, or behave differently. To see the version of your software, select **[Help/About DLG viewer]** from the Menu Bar.

The most significant difference between version 3.0 beta and version 2.0.1 is the addition of functions to display Spatial Data Transfer Standard (SDTS) vector data.

This beta release will expire (cease to function) on July 1, 1998. A non-expiring version 3.0 will be released sometime before then. The purpose of a beta release is to allow user testing before releasing a final version. Please send comments and bug reports to dlgview@mailrmon1.er.usgs.gov.

The *dlgv32* software runs on Windows NT and Windows 95. It installs using the “run” option located on the start menu. Earlier versions of the software should be uninstalled [**Start/Settings/Control Panel/Add, Remove Programs**] before installing later versions.

dlgv32 displays three kinds of U. S. Geological Survey cartographic data sets:

1. Digital line graph optional format (DLG-O)
2. Digital line graph SDTS (DLG/SDTS)
3. Digital raster graphics (DRG).

dlgv32 is not a substitute for commercial geographic information system (GIS) software. The program is a data viewer, designed to allow preview of USGS data. It contains no editing, analysis, or other GIS functions. This is a result of deliberate government policy to avoid competition with private-sector software.

dlgv32 is not a stand-alone tutorial for learning about USGS cartographic data. For information about DLG and DRG format, content, and structure, see the National Mapping Program GeoSpatial Data Standards page at <http://mapping.usgs.gov/www/html/1stand.html>

dlgv32 is public domain software and may be freely copied and distributed.

2. SDTS data

The Spatial Data Transfer Standard (SDTS) is a format standard for GIS data. The purpose of SDTS is to permit static transfers of spatial data between dissimilar computer systems. SDTS is a *transfer* format, not a *processing* format; it does not replace any internal formats of any GIS. SDTS is also a good archive format; an archive can be thought of as a data transfer through time rather than through space.

Although the SDTS was approved as a Federal Information Processing Standard (FIPS) in 1992, the format is not widely implemented in commercial software and is therefore still experimental. In 1995-96, the USGS produced data in SDTS format from its DLG holdings, and made these data available on the Internet. The intent was to promote SDTS use by serving large amounts of data for free. The DLG-O native format has not been discontinued, nor have any production or sales policies toward DLG-O data changed. DLG-O data are still being produced, and are still available from the same sources, at the same prices, as previously.

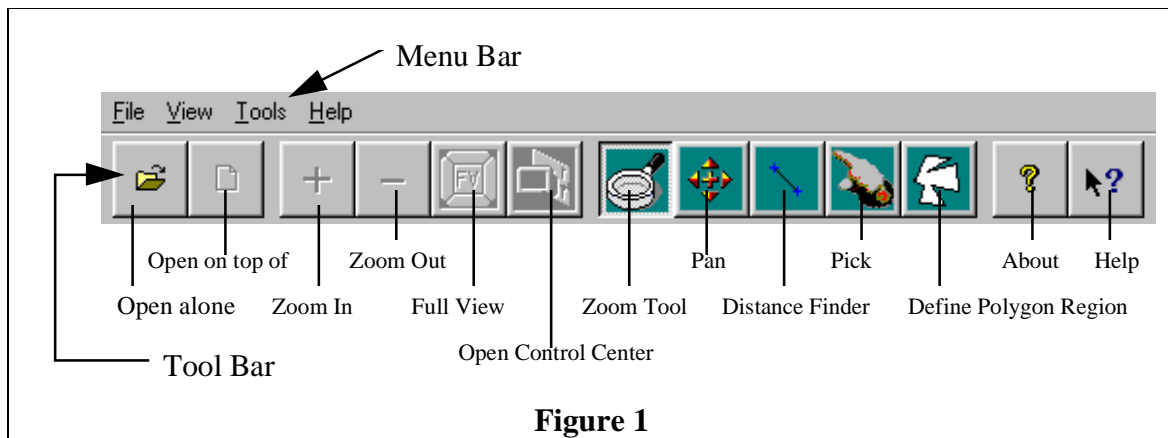
Because of the lack of commercial implementations, SDTS has gained a reputation for being extraordinarily complicated. The format is complex, but arguably no more so than other modern data formats. This release of *dlgv32* demonstrates that software can hide the complexity of SDTS from the end user, just as the complexity of other data formats is hidden by appropriate software.

However, users of DLG/SDTS data will find that retrieving these data and preparing them for use is not particularly easy. This is not due to SDTS, but rather to policy and data packaging decisions made when DLG-O data were mass-converted to SDTS. Some of these decisions were unavoidable, but others were simple mistakes, caused by inexperience with the SDTS format.

A separate document explains how to download and organize DLG/SDTS data for use with this viewer. That document is titled **Retrieving and Unpacking USGS DLG/SDTS Data**, and is available through the *dlgv32* web page at <http://mcmcweb.er.usgs.gov/viewers/dlgview.html>. For general information about SDTS, see <http://mcmcweb.er.usgs.gov/sdts>

3. Menu and Tool Bar Summary

Figure 1 shows the program Menu Bar and Tool Bar as they appear on startup. All Tool Bar functions are also accessible through pulldown menus from the Menu Bar. The Menu Bar contains some functions that are not on the Tool Bar.



4. Loading Files

4.1 Digital Line Graphs, optional format

Choose [open alone] button from the Tool Bar. A standard Windows 95 open window appears. The file list shows files with extension *.do*, *.opt*, and *.dlg* by default. To display files with other extensions, select **all files** in the file types subwindow. Multiple files can be selected using the standard Windows procedures of ctrl-click and shift-click (left mouse button).

4.2 Digital Line Graphs, SDTS format

Choose [**open alone**] from the Tool Bar, then select **SDTS Catalog Directory Files** (***catd.ddf**) in the file types subwindow. Catalog modules for SDTS transfers will be listed. Each transfer has one and only one catalog module, although it may have many more files. All files for the transfer must be in the directory with the catalog module.

The first time the software is used to display a particular scale of SDTS data, the program prompts for a data dictionary, a set of files that contains explanatory information about the data set. DLG/SDTS data were designed with one data dictionary for all data sets of a given scale. Version 3.x of *dlgv32* reflects this design by attempting to remember the location of the data dictionary for each scale. The software will first check to see if a data dictionary is loaded; if not, it checks the Win95 registry for the location of the appropriate data dictionary. If this also fails, the software prompts for the location of a data dictionary. This behavior will need to be altered in future versions of *dlgv32* as SDTS data become more common and less specialized.

Another window appears, titled **SDTS Layer Selection**. For currently available DLG/SDTS data, this window will contain a list of one layer. SDTS transfers can be defined to contain more than one spatial object layer, which is the reason for this window. Even if only one overlay is displayed, it is still necessary to select it and click the [**OK**] button.

The initial load of an SDTS transfer is usually slower than for the corresponding native format data.

4.3 Digital Raster Graphics

Choose [**open alone**] from the Tool Bar, then select **GeoTIFF (DRG)** files in the file types subwindow. Files with extensions .tif and .drg will be listed. *dlgv32* is not a general-purpose TIFF viewer and will not necessarily display all varieties of TIFF data.

4.4 Loading Multiple Files

dlgv32 will display multiple data sets in correct geospatial positions; that is, adjacent data sets can be mosaiced, and DLG data can be displayed on top of DRG data. Choose [**open on top of**] from the Tool Bar and select files.

4.5 Projections and Datums

The *dlgv32* display space adopts the coordinate system of the first data set opened. Subsequent data sets must be on the same projection and the same datum as the first data set. Attempts to open data sets on different projections or datums will result in an error message. For example, 1:2,000,000-scale DLG data on an Albers projection, and 1:100,000-scale DLG data on the Universal Transverse Mercator cannot be displayed at the same time unless one or both files are reprojected. Reprojections or datum transformations require different software.

5. Zoom and Pan

5.1 Zoom In

To zoom on the current center of the image, choose [**zoom in**] from the Tool Bar. The image will magnify by factors of 2.

To zoom to an area; choose [**zoom tool**] from the Tool Bar. Click and drag the left mouse button to define a rectangle. Release the mouse button to display the selected area in a full screen.

5.2 Zoom Out

To zoom out from the center of the image, choose [**zoom out**] from the Tool Bar. The image magnification will reduce by factors of two.

5.3 Pan at Constant Zoom

To change the center point of the image without changing the magnification, choose [**pan tool**] from the Tool Bar. Click on the image to define the new center point.

5.4 View Entire Data Set

Choose [**full view**] from the Tool Bar. The resolution is reduced to display all currently loaded data.

6. View Attributes

6.1 Header Information

Choose [**open control panel**] from the Tool Bar. Select one of the currently loaded overlays. Select [**metadata**] button. The resulting display depends on whether the selected overlay is a DLG, DLG/SDTS, or DRG. See the appropriate product standards for explanations of header information.

6.2 DLG-O Attributes

DLG spatial objects (lines, nodes, areas) have cartographic feature attributes attached to them. Attributes are stored as numeric codes. *dlgv32* simply displays the codes without attempting to interpret them. There are two ways to show these attributes in *dlgv32*:

1. To display the attributes of a single spatial element, choose [**pick**] tool from the Tool Bar. Click on a DLG line, node, or area. The element will be highlighted, and a window will appear that displays the major and minor code numbers for that element. Repeat for other elements.
2. To view attributes of a group of elements, choose [**pick**] tool from the Tool Bar. Click and drag with the left mouse button to define a rectangle. One of the elements in the box will be highlighted, and a window will appear that displays the major and minor code numbers for that element. Click the right mouse button repeatedly to cycle through all elements that touch the defined rectangle.

6.3 DLG/SDTS Attributes

6.3.1 Spatial objects

Spatial objects (lines, nodes, areas) of SDTS transfers are selected in the same way as spatial objects for DLG-O data. Refer to section 6.2.

Unlike DLG-O, SDTS data permits attributes to be stored as English text, or any other form the data producer believes appropriate. In the conversion of DLG-O data to SDTS, the USGS preserved the DLG-O attribute codes, but also interpreted these codes and stored the interpretations in the SDTS data. *dlgv32* displays both of these attributes. The software does not actually interpret the major-minor codes, but rather displays whatever information is contained in the SDTS data dictionary about the meaning of attribute codes.

6.3.2 Metadata

The SDTS requires that the data producers provide some statement of the sources and quality of the data. To view these statements, and other information about the transfer, select [**Open Control Center**], then select [**Metadata**].

7. Change Display Characteristic

7.1 Background Color

Choose [**View/Background**] from the Menu Bar. An array of sample colors will be displayed. Select the color desired for the display background, then click [**OK**].

7.2 DLG Line Weights and Line Colors

Choose [**open control panel**] from the Tool Bar. Select one of the currently loaded DLG overlays. Choose [**options**] button. A window will appear that allows selection of line weight, symbols for points and nodes, and colors for lines.

7.3 DRG Color Intensity

Choose [**open control panel**] from the Tool Bar. Select one of the currently loaded DRG overlays. Choose [**options**] button. A window will appear that allows the intensity of the DRG to be lightened or darkened. The colors of the DRG cannot actually be changed, but darkening the image makes it easier to see DLG vectors displayed over the raster DRG.

7.4 Hide Selected Parts of Image

Choose [**define polygon region**] from the Tool Bar. Click (do not hold) on a point in the image. As the cursor is moved, a line is drawn from the point of the mouse click. Click again to define a second fixed point. Repeat as many times as needed to define a polygon. Click the **right** mouse button to close the polygon.

When the polygon is closed, a window appears with a list of currently open overlays. Select the overlays that the polygon should apply to and click [**OK**]. The area inside the polygon remains displayed, while the area outside the polygon (on the selected overlays) becomes invisible.

To undo region hiding, choose [**open control center**]. Select an active overlay, and choose [**remove clip regions**].

8. Joining DRG Quadrangles

To join two adjacent DRG's, (refer to section 3.3, Loading Multiple Files) use the [**define polygon region**] tool to trace the neatline of the top DRG (refer to section 6.4, Hide Selected Parts of Image). **Pan** and **zoom** can be used without resetting the **define polygon region** tool. Clipping can be suspended by selecting one of the other tools. You can therefore **zoom out** and **zoom in** on another point on the image between polygon point selections.

The boundaries of a USGS quadrangle are not straight lines, but are close enough that defining a polygon with the four corners is usually adequate for 7.5-minute quadrangles. To get a more accurate approximation of the quadrangle boundary, select additional points between the corners.

Quadrangles are joined only in the *dlgv32* display space. The program does not provide capabilities to save joined images as new data files.

9. Printing Images

dlgv32 contains a relatively simple capability to print portions of images. The program uses standard Windows 95 printing techniques, and should work with any printer that works with other Windows 95 applications. However, printing has been tested with only a very small number of printers, and is not considered one of the program's strongest features.

- Zoom to the area you are interested in printing. Center the features of interest in the display.
- Select [**File/Print Preview**] from the Menu Bar. A page will display showing what your printout will look like. Select the **close** button to close the print preview window.
- Select [**File/Print Setup**] to change printer settings. For example, to change page orientation from portrait to landscape.
- Select [**File/Print**] to send the page to the printer.

The appearance of the printed page depends on several things, including the size and shape of your display window, printer type, and printer settings. *dlgv32* attempts to reproduce the magnification of the currently displayed image on the paper. Depending on the size and shape of the display relative to a paper page, more of the image may be printed than is displayed. Color and resolution characteristics depend on the type of printer.

dlgv32 provides no desktop publishing functions, such as the abilities to add borders, legends, additional data overlays, or custom symbolization.